DOCUMENT RESUME

ED 443 085 CS 014 019

AUTHOR	Petersen, Gregg; Patton, James E.; Mills, James; Gabe, Rose; McBride, Robert; Wanat, Carolyn
TITLE	Educators' Judgements of Children's Spelling Errors as Predictors of Reading Disability.
PUB DATE	1999-00-00
NOTE	15p.; Paper presented at the Annual Convention of the National Association of School Psychologists (Las Vegas, NV, April 6-10, 1999).
PUB TYPE	Reports - Research (143) -- Speeches/Meeting Papers (150)
EDRS PRICE	MF01/PC01 Plus Postage.
DESCRIPTORS	Developmental Delays; Elementary Education; Elementary School Teachers; Predictor Variables; *Reading Diagnosis; *Reading Difficulties; School Psychologists; *Spelling; Teacher Surveys
IDENTIFIERS	*Teacher Judgments

ABSTRACT

This paper presents the results of a two-part survey that investigated elementary classroom teachers' awareness of the relevance of students' spelling performance to the identification of reading disability. In part one, 61 of 84 surveyed teachers of grades 2, 3, 4, and 5 (73%) and 16 of 22 school psychologists (73%) indicated that they do, routinely, evaluate students' spelling production when judging the referral-related significance of reading skill delays. In a second, separate survey, 55 primary and 48 intermediate grade teachers rated the importance of each of five specific types of spelling errors to the diagnosis of reading disability among moderately delayed readers. For two of the error types, the teachers were quite knowledgeable about their discriminative relevance. However, across all five errors, the rate of correct response was only 57%, and teachers were particularly likely to misjudge the relevance of letter orientation mistakes. The results of this study, though encouraging in some aspects, point out the gap that still exists between what is currently known, versus what actually is practiced, in the diagnosis of reading disability. (Contains 2 tables and 13 references. Appendix A contains the Spelling Error Survey--Instructions to Teachers. Attached are a primary and an intermediate level example of the form used in the study.) (Author/RS)

Reproductions supplied by EDRS are the best that can be made
from the original document.

ED 443 085

Educators' Judgements of Children's Spelling Errors As Predictors of Reading Disability*

Gregg Petersen
Cedar Rapids Community Schools
James E. Patton
James Mills
Rose Gabe
Robert McBride
Grant Wood Area Education Agency
Carolyn Wanat
University of Iowa

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
This document has been reproduced as received from the person or organization originating it.
Minor changes have been made to improve reproduction quality.
Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
J. PATTON
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

Abstract

This poster session presents the results of a two-part survey study that investigated elementary classroom teachers' awareness of the relevance of students' spelling performance to the identification of "reading disability". In part one, 61 of 84 surveyed teachers of grades 2, 3, 4, and 5 (73%), and 16 of 22 school psychologists (73%) indicated that they do, routinely, evaluate students' spelling productions when judging the referral-related significance of reading skill delays. In a second, separate survey, 55 primary and 48 intermediate grade teachers rated the importance of each of five specific types of spelling error to the diagnosis of reading disability among moderately delayed readers. For two of the error types the teachers were quite knowledgeable about their discriminative relevance (i.e., for "letter missequencing" and "orthographic substitution" errors the ratings were 96% and 76% correct, respectively). However, across all five errors, the rate of correct response was only 57%, and teachers were particularly likely to misjudge the relevance of "letter orientation" mistakes (83% incorrect ratings). The results of the study, while encouraging in some respects, point up the gap that still exists between what currently is known about, versus what actually is practiced in the diagnosis of reading disability.

*Poster presentation, 1999 Annual Convention of the National Association of School Psychologists; Las Vegas, Nevada.

BEST COPY AVAILABLE

CS 014 019

Rationale

Given, first, that the number of American students who have significant reading skill delays far exceeds the number who actually are enrolled in Learning Disability (LD) programs (e.g., Kameenui, 1996), and second, that LD placement decisions frequently are driven by teacher-initiated student referral for evaluation (e.g., Algozzine, Christensen, & Ysseldyke, 1981), it is inevitably true that teacher judgement is a critical component of the placement decision process. Do teachers make good decisions about the referral of prospective LD students?

In a recent survey study, Fowler, Patton, and Yarbrough (1998) asked over 500 elementary public school teachers and support staff to rate five empirically "valid" and five clinical-traditional "non-valid" student trait categories for their significance as referral-supporting predictors of reading disability. In reporting that their respondents were only modestly knowledgeable about the relevance (or irrelevance) of the traits, they noted with particular interest that most (80%) continued to accept as valid the (now empirically unsupported) clinical diagnosis of "dyslexia" as a condition that is distinct from reading disability and closely associated with the etiologically unimportant traits of high aptitude and symbol reversal productions (see, e.g., Aaron, 1995; Shaywitz, 1996).

These findings imply that teachers may not always use valid information to decide which of their reading delayed students are to be referred to the Child Study Team for possible evaluation and placement. However, because the trait categories in Fowler et al's study were fairly generic (i.e., poor short term memory, word-finding difficulty, poor grammar, phonological insensitivity, and limited vocabulary versus stuttering, left-handedness, poor coordination, symbol reversal productions, and high intelligence) it is not clear just how they might be specifically manifested and evaluated by teachers in real school settings.

Accordingly, in the present study we extended this investigation of teacher knowledgeability about reading disability traits to a specific academic performance area; namely, spelling. The two questions we addressed were: 1) Do elementary classroom teachers typically examine spelling traits in the course of evaluating a student's reading problems? and 2) Are those teachers knowledgeable about the relevance of particular types of spelling errors to the identification of reading disability?

Method and Results, Part One

To answer the first question, in June of 1998 we asked 43 primary grade teachers (grades two and three) and 41 intermediate grade teachers (grades four and five), in 12 Cedar Rapids, Iowa public elementary school buildings, to respond to a two-part question: a) "In the course of deciding whether a student's reading skill delay is significant enough to warrant a Child Study Team referral, do you typically take into consideration the quality or nature of that student's spelling (yes or no)?"; and b) "If 'yes', are there particular spelling traits or features you would look for?"

Sixty-one of our 84 repondents (73%) did answer 'yes' to question a. However, the proportion of yes responses was significantly higher among primary versus intermediate grade teachers [37 of 43 = 86% versus 24 of 41 = 59%; $\underline{X}^2$ (1) = 7.98, $\underline{p}$< .01]. Additionally, among the 61 'yes' respondents, 54 cited "phonetic accuracy" as a primary target trait [i.e., 32 of 37 primary grade teachers (86%), and 22 of 24 intermediate grade teachers (92%); $\underline{X}^2$ (1) = 0.38, $\underline{p}$> .05], and 21% identified "letter orientation errors" as being important, also [i.e., 10 of 37 primary grade teachers (27%), and 3 of 24 intermediate grade teachers (13%); $\underline{X}^2$ (1) = 1.82, $\underline{p}$ >.05]. [Note. Twenty-two Iowa School Psychologists also completed this questionnaire, with 16 (73%) answering 'yes' to question a. Among those (yes) respondents, 14 (88%) cited "phonetic accuracy", and four (18%) cited "letter misorientation" as important diagnostic spelling error traits.]

Method , Part Two

To address our second question, we designed a survey instrument describing and illustrating, with examples, five types of spelling errors (see Appendix A). Two of the error types -- semantic substituion (SS) and letter missequencing (LMS) -- have been reported to be more characteristic of reading disabled students (e.g., Seidenberg, Bruck, Fornarolo, & Beckman, 1985; Siegel, 1985; Werker, Bryson, & Wassenberg, 1989). The other three error types -- orthographic substitution (OS), letter misorientation (LMO), and unconstrained phonetic spelling (Un) -- have not (e.g., Landerl, Frith, & Wimmer, 1996; Lennox & Siegel, 1993; Patton, Snell, Thursby, & Yarbrough, 1995). In February of 1999, the surveys were distributed to classroom teachers in 14 Cedar Rapids public elementary schools, with instructions to a) rate each spelling error ('yes' or 'no') as to whether it would or would not be typical of a reading disabled student, and b) rank order the error types according to their diagnostic significance for reading disability. Fifty-five primary grade teachers and 48 intermediate grade teachers completed and returned the forms.

Results, Part Two

In Table 1, the response frequencies and correct response percentages for part "a" of the survey are summarized across the five spelling errors for primary, intermediate, and all teacher respondents. To determine whether the primary and intermediate teachers differed in their rates of correct response, a Chi Square analysis was computed for each spelling error type. In no case was the outcome significant. Accordingly, these data were collapsed across both teacher groups, and for each spelling error a Chi Square analysis was computed to determine the degree to which teachers' yes/no response rates differed from chance level (50%). For two error types -- SS and Un -- the statistic values were not significant. They were significant for the other three error types [i.e., for OS, $\underline{X}^2$ (1)=27.27, $\underline{p} \leq .001$; for LMS, $\underline{X}^2$ (1)=87.62, $\underline{p} < .001$; and for LMO, $\underline{X}^2$ (1)=43.58, $\underline{p} < .001$]. For the first two error types (OS, LMS) the variation was in the direction of "correctness"; but for the latter (LMO), it was in the direction of "incorrectness".

For part "b" of the survey, Table 2 shows, for primary, intermediate, and all teachers, the response percentages for the rank ordering of the five spelling error types. To determine the degree to which the percentages differed between primary and intermediate teachers across the five rating positions we computed a Chi Square statistic for each spelling error type. Here again, there were no significant values. Therefore, we collapsed the data across both groups and carried out an R x C (spelling error type by rated position) Chi Square analysis, the outcome of which was highly significant [$\underline{X}^2$ (16)=286.69, $\underline{p}<.0001$]. An inspection of the response percentages revealed that the greatest deviations from at-chance ranking (.04) occurred for LMS (rated with greatest frequency as most characteristic), LMO (rated with greatest frequency as second most characteristic), OS (rated with greatest frequency as fourth most characteristic), and SS (rated with greatest frequency as least characteristic). To highlight the variation, each rating position was assigned its reverse order value (i.e., most characteristic=5 points, least characteristic=1 point). Then, for each error type, the rating position frequencies were multiplied by their respective values and summed. The resulting order of (most-to-least characteristic) errors was: LMS ($\underline{M}$=4.18, $\underline{SD}$=0.91), LMO ($\underline{M}$=3.75, $\underline{SD}$=0.88), Un ($\underline{M}$=2.78, $\underline{SD}$=1.20), SS ($\underline{M}$=2.30, $\underline{SD}$=1.51), and OS ($\underline{M}$=1.99, $\underline{SD}$=0.95).

Table 1

Response Frequencies (and Percent Correct Responses) for Primary, Intermediate, and All Teacher Respondents for Survey Part "a"

	SS[a]	OS[b]	LMS[c]	LMO[d]	U n
Primary , Frequency "yes"	20	14	53	45	25
Frequency "no"	35	41	2	10	30
(% correct)	(36%)	(75%)	(96%)	(18%)	(55%)
Intermediate,Frequency "yes"	26	11	46	40	25
Frequency "no"	22	37	2	8	23
(% correct)	(54%)	(77%)	(96%)	(17%)	(48%)
All Teachers,Frequency"yes"	46	25	99	85	50
Frequency"no"	57	78	4	18	53
(% correct)	(45%)	(76%)	(96%)	(17%)	(51%)

[a] Semantic Substitution

[b] Orthographic Substitution

[c] Letter Missequence

[d] Letter Misorientation

[e] Unconstrained Phonetic Spelling

Table 2

Rank Order Response Percentages for Primary, Intermediate, and All Teachers Summarized Across Spelling Error Types

		Rank Order (1=most characteristic, 5=least characteristic)				
		1	2	3	4	5
SS [a]	% Primary	.03	.01	.03	.02	.10
	% Intermediate	.04	.01	.04	.03	.09
	% All Teachers	.04	.01	.04	.03	.10
OS [b]	% Primary	.00	.01	.03	.11	.05
	% Intermediate	.01	.01	.03	.08	.07
	% All Teachers	.01	.01	.03	.10	.06
LMS [c]	% Primary	.09	.06	.04	.00	.00
	% Intermediate	.09	.06	.03	.01	.00
	% All Teachers	.09	.06	.04	.01	.00
LMO [d]	% Primary	.05	.08	.05	.01	.01
	% Intermediate	.04	.11	.01	.02	.01
	% All Teachers	.04	.10	.03	.02	.01
Un [e]	% Primary	.03	.04	.05	.05	.03
	% Intermediate	.02	.01	.08	.06	.03
	% All Teachers	.02	.03	.07	.05	.03

[a] Semantic Substitution

[b] Orthographic Substitution

[c] Letter Missequence

[d] Letter Misorientation

[e] Unconstrained Phonetic Spelling

Significance

The appropriateness of our selection of 'spelling' as the focus for this study rests upon four points: 1) That spelling instruction is an important adjunct to the teaching of reading (e.g., Adams, 1990; Whittlesea, 1987), 2) That there is a long, clinical tradition linking the production of symbol reversals to "dyslexia" (e.g., Orton, 1937), 3) That there exists a contemporary, empirical literature supporting the discriminability of good versus poor readers on the basis of certain (phonological skill-related) types of spelling error (e.g., Landerl, Frith, & Wimmer, 1996; Seidenberg, Bruck, Fornarolo, & Beckman, 1985), and 4) That there is, on the part of classroom teachers, an opportunity for and an inclination to examine students' spelling errors when evaluating the prospect of reading disability.

The validity of the last (fourth) point is supported by the principal outcome from Part One of this study, indicating that most elementary teachers (especially teachers of primary grades) do examine the spelling errors of prospective reading disabled students. Furthermore, their reported sensitivity to the "phonetic accuracy" of misspelled words supports Fowler et al's (1998) conclusion that teachers, in a broad sense, are increasingly aware of the importance of phonological competencies to early reading skill development.

Possibly, our teachers' (correct) rejection of "orthographic substitution" as a characteristic error of the reading disabled child reflects this awareness (i.e., because the phonological competence of good readers renders them much more sensitive to orthography). Yet, in the main, the outcomes of Part Two of this study indicate that our teachers were not well-informed about the relevance and irrelevance of specific types of spelling errors (i.e., that "semantic substitutions" are more typical of poor readers, who are less likely to notice a mismatch between a word's spelling and its pronunciation; and that "letter orientation" errors and "unconstrained phonetic spellings" occur among both good and poor readers at the age levels represented here. Even where response correctness was at its highest --namely, for the rating of "letter missequencing" errors -- we suspect that many of our teachers were not knowledgeable about the etiologic difference between that type of "reversal" error and its "letter misorientation" clinical counterpart, since 53% of our teachers rank-ordered them consecutively in the first two positions). To the extent that this is so, and that our findings are representative, we conclude that teachers, and perhaps other Education practitioners too, need to learn much more about reading processes if they are to make fully informed referral and placement decisions.

References

Aaron, P.G. (1995). Differential diagnosis of reading disabilities. School Psychology Review, 24(3), 345-360.

Adams, M. (1990). Beginning To Read. The MIT Press, Cambridge, Mass.

Algozzine, B., Christenson, S., & Ysseldyke, J. (1981). Probabilities Associated With the Referral To Placement Process. Minneapolis: University of Minnesota, Institute For Research On Learning Disabilities.

Fowler, J., Patton, J.E., & Yarbrough, D.B. (1998). How are reading disabled children identified? Poster presentation to the 1998 Annual Convention of the National Association of School Psychologists; Orlando, Florida.

Kameenui, E.J. (Ed). (1996). Learning to read/reading to learn: Helping children with learning disabilities to succeed information kit. (Technical Report). Eugene, OR: National Center To Improve the Tools of Educators.

Landerl, K., Frith, U., & Wimmer, H. (1996). Intrusion of orthographic knowledge on phonemic awareness: Strong in normal readers, weak in dyslexic readers. Applied Psycholinguistics, 17, 1-14.

Lennox, C., & Siegel, L.S. (1993). Visual and phonological spelling errors in subtypes of children with learning disabilities. Applied Psycholinguistics, 14, 473-488.

Orton, S.T. (1937). Reading, Writing, and Speech Problems In Children. New York: W.W. Norton.

Patton, J.E., Snell, J., Thursby, D., & Yarbrough, D.B. (1995). A longitudinal study of children's written symbol reversals. Poster presentation to the 1995 Annual Convention of the National Association of School Psychologists; Chicago, Ill.

Seidenberg, M.S., Bruck, M., Fornarolo, G., & Backman, J. (1985). Word recognition processes of poor and disabled readers: Do they necessarily differ? Applied Psycholinguistics, 6, 161-180.

Shaywitz, S.E. (1996). Dyslexia. Scientific American, 275, 98-104.

Siegel, L.S. (1985). Psycholinguistic aspects of reading. In L.S. Siegel & P.J. Moreson (Eds). Cognitive Development In Atypical Children. New York: Springer-Verlag.

Whittlesea, B.W.A. (1987). Preservation of specific experiences in the representation of general knowledge. Journal of Experimental Psychology: Learning, Memory, and Cognition, 13, 3-17.

Appendix A

Spelling Error Survey - Instructions To Teachers

Dear Teacher,

As you know, many students in our schools have significant reading problems. For some, the severity of their reading deficiency makes very easy and reliable their identification as "Learning Disabled". For many others, however, the degree of skill delay is more moderate, and it may be difficult to decide who, among these students, to refer to the school's CST as potential candidates for Special Education support.

Last spring, in response to our pilot survey, many of you indicated that, in the course of making referral decisions about these (moderately reading delayed) students, you routinely take into consideration the nature of their spelling errors. To follow up on this outcome, we now are seeking more information about the particular kinds of errors you consider to be important.

Accordingly, described on the back of this form, and illustrated with examples, are five types of spelling errors that have been referenced in the research literature on reading skill development at the elementary level. Please consider each error type in the context of your concern for students in your classroom with moderate reading skill delays who are not already enrolled in RTP or SCI Learning Disability programs. For each spelling error type, please indicate (by circling 'YES' or 'NO') whether you would consider it to be suggestive or predictive of "reading disability" if it occurred with some frequency in one of your moderately poor reader's written work. Then, please rank order the five spelling error types according to their relative importance, to you, as predictors of reading disability (1=most predictive, 5=least predictive). Finally, please indicate, at the bottom of the form, the grade level(s) you currently teach. Thank you very much.

Examples (Primary Form)

Error Name and Description	Target Word	Spelled As	Predictive of Reading Disability?	Rank Order
"Semantic Substitution": A word from the same meaning context has been substituted for the target word.	leg	arm	YES NO	____
	cap	hat		
	jump	hop		
	same	alike		
	under	below		
"Orthographic Substitution": The target word's spelling is phonetically precise but incorrect.	both	boath	YES NO	____
	care	cair		
	shape	shayp		
	boys	bois		
	lie	ligh		
"Letter Missequencing": One or more letters in the target word is misordered.	black	balck	YES NO	____
	corn	cron		
	storm	stnom		
	first	friSt		
	drop	dorp		
"Letter Misorientation": One or more letters in the target word has a reversed orientation.	back	dack	YES NO	____
	hop	hoq		
	sad	sab		
	job	Jod		
	drink	brink		
"Unconstrained Spelling": A 'plausible' spelling of the target word has been produced that is phonetically ambiguous because at least one more letter is needed to fix (constrain) its exact pronunciation.	beans	bens	YES NO	____
	coat	Cot		
	night	nit		
	deep	dep		
	strike	strik		

Grade Level(s) Taught: 2nd 3rd 4th 5th

Examples (Intermediate Form)

Error Name and Description	Target Word	Spelled As	Predictive of Reading Disability?	Rank Order
"Semantic Substitution": A word from the same meaning context has been substituted for the target word.	sweep	broom	YES NO	____
	gate	fence		
	loud	shout		
	sound	noise		
	song	poem		
"Orthographic Substitution": The target word's spelling is phonetically precise but incorrect.	cage	caige	YES NO	____
	chase	chace		
	untie	untigh		
	brief	breaf		
	juice	joose		
"Letter Missequencing": One or more letters in the target word is misordered.	basket	baKset	YES NO	____
	else	esle		
	jump	jupm		
	afford	affrod		
	cargo	crago		
"Letter Misorientation": One or more letters in the target word has a reversed orientation.	bacon	dacon	YES NO	____
	copper	cogger		
	feed	feeb		
	chapter	chapter		
	window	window		
"Unconstrained Spelling": A 'plausible' spelling of the target word has been produced that is phonetically ambiguous because at least one more letter is needed to fix (constrain) its exact pronunciation.	brake	brak	YES NO	____
	like	lik		
	waist	wast		
	brain	bran		
	cheeks	cheks		

Grade Level(s) Taught: 2nd 3rd 4th 5th